



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/571,876	03/15/2006	Tadashi Yamamoto	10921.0385USWO	6870
52835	7590	05/21/2008		
HAMRE, SCHUMANN, MUELLER & LARSON, P.C.				
P.O. BOX 2902				
MINNEAPOLIS, MN 55402-0902				
EXAMINER				
STEPHENS, JUANITA DIONNE				
ART UNIT		PAPER NUMBER		
2853				
MAIL DATE		DELIVERY MODE		
05/21/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/571,876

Applicant(s)

YAMAMOTO ET AL.

Examiner

Juanita D. Stephens

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 1/22/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagahata et al. (US 5,917,531) in view of Ohkubo et al. (US 4,259,564) and JP-05-212888 A.

Nagahata et al. discloses a method of manufacturing a thermal printhead and the thermal printhead (Fig. 1) comprising: **1**) an insulating substrate (1)(col 14, lns 16-17), **2**) a common electrode (4b) formed on the insulating substrate and including a plurality of comb teeth (4b1)(col 4, lns 66-67), **3**) a plurality of individual electrodes (4a) formed on the insulating substrate (col 4, ln 64-col 5, ln 1) and a resistor layer (15) formed on the insulating substrate and electrically connected to the comb teeth and the individual electrodes (col 5, lns 6-16), **4**) the common electrode and the individual electrodes comprise a thick film (col 5, lns 1-4), **5**) the common electrode and the individual electrodes have a film thickness of 0.3 to 1.0 μm (0.6 μm)(col 5, lns 4-5), **6**) wherein the resistor layer (5) is in a form of an elongated strip and partially covers the comb teeth of the common electrode and the individual electrodes alternately (col 5, lns 8-11), **7**) wherein the resistor layer, the common electrode and the individual electrodes are covered by a protective layer (6) (col 5, lns 37-38), **8**) wherein the step of forming the

common electrode and the plurality of individual electrodes comprises thick-film printing of the conductive material (col 5, Ins 1-4), and **9**) wherein the step of forming the resistor layer (5) is performed by a technique selected from the group consisting of sputtering, vacuum evaporation, CVD and plating (col 6, In 66-col 7, In 3). Nagahata et al. further at least teaches that the so called thick film type thermal head is taken as an example to be described, however, the present invention is not limited to this but also applicable to the so called thin film type thermal head (col 6, In 63-66).

Nagahata et al. differs from the claimed invention in the recitation of **1**) wherein the resistor layer comprises a thin film, **2**) wherein the resistor layer has a film thickness of 0.05 to 0.2 μm , and **3**) the resistor layer is TaSiO_2 . Ohkubo et al. at least teaches an integrated thermal printing head utilizing thick and thin film techniques wherein the resistor layer (32) comprises a thin film (col 3, Ins 66-67) and the common electrode (25) and individual electrode (211 and 212) comprises a thick film, and wherein the resistor layer has a film thickness of 0.05 to 0.2 μm (0.1 microns: 0.1 micron (μ or μu) converts to 0.1 micrometre (μm)) (col 3, In 66-col 4, In 1). It would have been obvious at the time the invention was made to a person having ordinary skill in the ink jet art to modify Nagahata et al. with the thin film resistor as taught to be old by Ohkubo et al. for the purpose of improving resolution, print quality and cost performance characteristic, and providing low consumption of electric power. JP-05-212888 A at least teaches a thermal head having a heating element layer comprising TaSiO_2 and has thickness 500-2000 Angstroms (Abstract) (500 angstrom converts to 0.05micrometre (μm) or 2000 angstrom converts to 0.2micrometre (μm). It would have been obvious at the time the

invention was made to a person having ordinary skill in the ink jet art to modify Nagahata et al. with the TaSiO₂ resistor as taught to be old by JP-05-212888 A for the purpose of preventing colouring fog using low energy. The method of claims 6-10 are discussed above with respect to the apparatus.

Allowable Subject Matter

3. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teaches, suggest or render obvious the limitation of wherein the comb teeth and the individual electrodes have respective front ends facing and spaced from each other and wherein the resistor layer is divided into a plurality of electrically-separated resistor portions correspondingly to the comb teeth and the individual electrodes, each of the resistor portion being positioned between the front end of one of the comb teeth and the front end of the corresponding one of the individual electrodes. This invention solves the problem of providing good responsiveness to heating and heat dissipation suitable for high speed printing.

5. Claim 11 is allowed.

6. The following is an examiner's statement of reasons for allowance:

Claim 11 corresponds to the allowable original claim 4.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

7. Applicant's arguments with respect to claim 1-3 and 5-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex (Monday-Thursday 9:00 am -6:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juanita D. Stephens
Primary Examiner
Art Unit 2853

/Juanita D. Stephens/
Primary Examiner, Art Unit 2853
May 13, 2008